

TABLE 22

**Companies with domestic R&D paid for by the company and others and performed by the company in the artificial intelligence technology focus area, by industry and company size: 2019**

(Millions of U.S. dollars and number)

Industry and company size	NAICS code	Domestic R&D		Artificial intelligence R&D							
				Total		Paid for by the company		Paid for by others			
		Companies <sup>a</sup> (number)	Amount	Companies <sup>a</sup> (number)	Amount	Companies <sup>a</sup> (number)	Amount	Companies <sup>a</sup> (number)	Amount	Companies <sup>a</sup> (number)	Amount
All industries	21–23, 31–33, 42–81	28,270	492,956	2,590	i 15,351	i 2,340	i 14,038	i 350	i 1,313	i	
Manufacturing industries	31–33	15,180	285,674	890	i 4,665	i 850	i 4,484	i 80		181	
Food	311	870	4,180	10	3	10	3	10	1		
Beverage and tobacco products	312	350	1,082	10	1	10	1	0	0		
Textile, apparel, and leather products	313–16	240	904	10	4	10	4	0	0		
Wood products	321	80	186	10	1	10	1	0	0		
Paper	322	90	1,064	10	1	10	1	0	0		
Printing and related support activities	323	200	420	i 0	0	0	0	0	0		
Petroleum and coal products	324	80	1,306	0	0	0	0	0	0		
Chemicals	325	2,330	97,063	40	123	40	119	10	5		
Basic chemicals	3251	240	2,360	10	5	10	i 2	i 10	4		
Resin, synthetic rubber, and artificial synthetic fibers and filaments	3252	180	1,172	10	5	10	5	0	0		
Pesticide, fertilizer, and other agricultural chemicals	3253	150	1,822 - 1,846	20	i 75	20	i 75	10	1		
Pharmaceuticals and medicines	3254	1,060	87,619	20	33	20	33	10	1		
Soap, cleaning compound, and toilet preparation	3256	270	2,760	0	0	0	0	0	0		
Paint, coating, adhesive, and other chemicals	3255, 3259	460	1,305 - 1,333	10	4	10	4	0	0		
Plastics and rubber products	326	790	2,856	20	6	20	6	0	0		
Nonmetallic mineral products	327	170	1,508	i 10	5	10	5	0	0		
Primary metals	331	200	665	10	1	10	1	10	*		
Fabricated metal products	332	1,840	2,885	20	16	20	16	0	0		
Machinery	333	2,240	15,184	120	i 209	110	i 200	20	9		
Agricultural implement	33311	190	1,921	20	i 44	20	i 44	10	i *	i	
Semiconductor machinery	333242	80	4,459	10	6	10	6	0	0		
Engine, turbine, and power transmission equipment	3336	110	1,301	10	4	0	0	10	4		
Other machinery	other 333	1,880	7,503	100	i 155	90	i 150	20	5		
Computer and electronic products	334	2,280	86,729	330	i 2,813	i 310	i 2,733	i 30	i 80		
Communications equipment	3342	300	12,595	60	i 66	i 60	i 66	i 10	i *		
Semiconductor and other electronic components	3344	640	35,183	i 90	i 1,357	i 90	i 1,323	i 20	i 34		
Navigational, measuring, electromedical, and control instruments	3345	1,140	17,562	150	i 238	i 140	i 193	i 20	i 45		
Electromedical, electrotherapeutic, and irradiation apparatus	334510, 334517	230	3,342	20	i 5	10	3	10	i 3		

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Search, detection, navigation, guidance, aeronautical, and nautical system and instrument	334511	190	9,662		60	i	120		60	i	79	i	10		41	
Other measuring and controlling device	other 3345	740	4,558		70	i	113	i	70	i	111	i	10		2	
Other computer and electronic products	other 334	220	21,388		40	i	1,151		40	i	1,151		10	i	*	
Electrical equipment, appliances, and components	335	900	5,263		220	i	331	i	220	i	324	i	10	i	6	
Transportation equipment	336	1,090	45,375		50		857		50		781		10		76	i
Motor vehicles, bodies, trailers, and parts	3361–63	540	24,117		40	i	740		40	i	704		10		36	
Aerospace products and parts	3364	380	i 18,358	i	10		115	i	10		75	i	10		40	i
Aircraft, aircraft engine, and aircraft parts	336411–13	200	16,891	i	10		113	i	10		74	i	10	i	40	i
Guided missile, space vehicle, and related parts	336414–15, 336419	190	i 1,467		10		1		10		1		10		*	
Military armored vehicle, tank, and tank component	336992	30	35		0		0		0		0		0		0	
Other transportation	other 336	150	2,865		10		2		10		2		0		0	
Furniture and related products	337	190	409		10		1		10		1		0		0	
Miscellaneous	339	1,310	18,596		100	i	293	i	100	i	289	i	20	i	4	i
Medical equipment and supplies	3391	790	16,014		100	i	279	i	90	i	275	i	20	i	4	i
Other miscellaneous manufacturing	3399	520	2,582		10		14		10		14		0		0	
Nonmanufacturing industries	21–23, 42–81	13,100	207,283		1,710	i	10,686	i	1,500	i	9,554	i	280	i	1,132	i
Mining, quarrying, oil and gas extraction, and support activities	21	160	2,717		10	i	49		10	i	49		0		0	
Utilities	22	40	275		10		*		10		*		0		0	
Wholesale trade	42	1,560	1,191		10	i	1	i	10	i	0 - 2	i	10	i	0 - 2	i
Electronic shopping and electronic auctions	454111–12	60	3,131 - 15,818	i	10	i	1 - 2,138	i	10	i	0 - 2,135	i	10		1 - 6	
Transportation and warehousing	48–49	130	9,890	i	20		331	i	20		331	i	0		0	
Information	51	3,090	110,227		520		5,426		520		5,396		10		30	
Publishing	511	1,080	33,019		160	i	2,061		160	i	2,057		10		3	
Newspaper, periodical, book, and directory publishers	5111	40	61		0		0		0		0		0		0	
Software publishers	5112	1,040	32,958		160	i	2,061		160	i	2,057		10		3	
Telecommunications	517	210	3,733		10		13		10		13		0		0	
Data processing, hosting, and related services	518	1,480	30,558		310		1,647		310		1,620		10		26	

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Other information	other 51	340	42,917	50	1,705	50	1,705	0	0		
Finance and insurance	52	220	8,917	20	313	20	313	0	0		
Real estate and rental and leasing	53	50	1,371	10	0 - 1,327	10	0 - 1,327	0	0		
Lessors of nonfinancial intangible assets (except copyrighted works)	533	20	45	0	0	0	0	0	0		
Other real estate and rental and leasing	other 53	30	1,326	10	0 - 1,327	10	0 - 1,327	0	0		
Professional, scientific, and technical services	54	6,500	53,233	1,100	2,356	900	1,258	260	1,098		
Architectural, engineering, and related services	5413	1,450	4,207	110	115	70	41	50	74		
Computer systems design and related services	5415	3,020	21,046	640	1,080	590	742	70	338		
Scientific research and development services	5417	1,230	21,669	250	883	140	216	140	667		
Research and development in biotechnology	541711	310	6,457	30	17	20	11	20	6		
Research and development in the physical, engineering, and life sciences (except biotechnology)	541712	900	14,446	210	852	130	205	120	646		
Research and development in the social sciences and humanities	541720	30	766	10	14	0	0	10	14		
Other professional, scientific, and technical services	other 54	810	6,312	120	279	120	260	10	19		
Health care services	621-23	680	2,265	10	76	10	76	0	0		
Other nonmanufacturing	23, 44-45 (excluding 454111-12), 55-56, 624, 71-72, 81	680	1,380 - 14,067	30	0 - 2,135	30	0 - 2,135	0	0		
All companies (number of domestic employees)	-	28,270	492,956	2,590	15,351	2,340	14,038	350	1,313		
Small companies											
10-19 <sup>b</sup>	-	5,490	5,501	630	215	560	171	100	43		
20-49	-	7,980	12,418	800	589	730	466	110	123		
Medium companies											
50-99	-	4,960	14,021	370	520	340	461	50	59		
100-249	-	4,580	19,793	320	929	290	773	40	157		
Large companies											
250-499	-	2,140	18,883	160	776	140	418	30	358		
500-999	-	1,230	23,969	90	388	80	341	10	47		
1,000-4,999	-	1,330	75,671	150	1,477	140	1,460	10	17		

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5,000–9,999	–	240	50,811	40	947 i	40	870 i	20	78 i
10,000–24,999	–	220	88,263	30	2,279 i	30	1,964 i	10	315 i
25,000 or more	–	130	183,626	30	7,231 i	30	7,114 i	10	117 i

\* = amount &lt; \$500,000; i = &gt; 50% of the estimate is a combination of imputation and reweighting to account for nonresponse.

NAICS = 2012 North American Industry Classification System.

<sup>a</sup> Beginning in survey year 2018, these statistics include an adjustment to the weight to account for unit nonresponse.<sup>b</sup> The Business Enterprise Research and Development Survey does not include companies with fewer than 10 domestic employees.**Note(s):**

Detail may not add to total because of rounding. Industry classification is based on the dominant business code for domestic R&D performance, where available. For companies that did not report business codes, the classification used for sampling was assigned. Beginning in survey year 2018, statistics are representative of companies located in the United States that performed or funded \$50,000 or more of R&D. This change has affected the comparability of these estimates with estimates published for years prior to 2018. Companies could report R&D in one, more than one, or no application area. An estimate range may be displayed in place of a single estimate to avoid disclosing operations of individual companies.

**Source(s):**

National Center for Science and Engineering Statistics and Census Bureau, Business Enterprise Research and Development Survey, 2019.